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# Effects on Digital Citizenship: The Turkish Pre-service Teachers' Perspective

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## Abstract

*The purpose of this study was to investigate some effects on Turkish pre-service teachers' digital citizenship behaviours. With the rapid spread of technology, individuals have become a part of the digital world and faced the accompanying need to develop their digital citizenship skills. There is an increased importance to reveal the factors affecting the digital citizenship skills of pre-service teachers, who will raise digital citizens of the future. Data was gathered from 723 participants using three questionnaires written in Turkish. The results showed that internet self-efficacy, having own computer and having own internet connection affect digital citizenship. The findings of this study help in understanding some variables' (internet self-efficacy, having own computer, having own internet connection, sleep patterns, gender, grade, cumulative grade point average umjesto akronima and age) significant contributions on pre-service teachers' digital citizenship levels. This study provides a useful guideline for increasing pre-service teachers' digital citizenship scores by determining factors which can be manipulated through system design and implementation.*

**Key words**: *digital citizenship; having own computer; having own internet connection; internet self-efficacy; sleep patterns*

## Introduction

The digital age we are in has created the need for raising digital citizens who use technology in an effective and secure way, and who are aware of the responsible use of technology (Hollandsworth et al., 2011). Today, raising competent digital citizens with the required experience has become an important issue which is a close concern

of the educational system and teachers. This leads teachers to become more conscious and good digital citizens (Ribble, 2015). The International Society for Technology in Education (ISTE) has emphasized that today's teachers must have digital citizenship skills that include the use of technology in accordance with law and ethics (2007). An information and network society structure has emerged together with the recent development of virtual environments (d'Haenens et al., 2007). Digital citizenship, which is recognized as an important theme in terms of ensuring the order of such an emerging structure (Castells, 2011) as a result of sharing and producing existing and new information, and the fulfilment of communication and processes in virtual environments, has attracted the attention of researchers and yielded various definitions of this concept. According to one definition, digital citizenship refers to the norms of appropriate, responsible behaviour with regard to technology use (Ribble, 2015, p.15). Mossberger et al. (2008) addressed digital citizenship from a different point of view and stated that this concept is related to the ability to create and interpret internet content and get the opportunity to access the internet and use it regularly. The common point of view in these definitions is that digital citizenship is both about the ability to use the technology and being aware of one's responsibilities while using technology (Carrizales, 2009; Ribble, 2015).

Although the use of computers and the internet seems to have become widespread among pre-service teachers (Birgin et al., 2010; Gialamas et al., 2013), according to the studies conducted, it does not progress at the same rate with digital citizenship skills (Sendag, 2010). In this respect, there is a need to develop the digital citizenship skills of pre-service teachers through the programmes for teacher education (Kumar & Vigil, 2011; Stobaugh & Tassell, 2011). Pre-service teachers (as future teachers) should be no strangers to subjects such as proper use of the virtual environment, ethical rules, copyrights, and policy in digital environments. Thus, they will also be an example of a good digital citizen for their students and a guide for using these environments (Banister & Vannatta Reinhart, 2012; Beycioglu, 2013; Silva & Mason, 2003).

## *Background*

### Digital citizenship and learners

According to the classification by Marshall & Bottomore (1992, p. 30), new information and responsibilities (legal, ethical, etc.) emerging from the civil, political and social area have brought about digital citizenship (Coleman, 2006). The new responsibilities have also brought about many sanctions. Nevertheless, people can do things that are illegal and unethical in virtual environments without thinking about these sanctions and responsibilities. For Ribble (2015), this is due to lack of information regarding digital citizenship responsibilities. Therefore, the educational system should enable learners to become active representatives of information environments (Kim et al., 2013). Students should be able to understand citizenship and its functioning, focus and know how to solve their social problems and have a good and satisfying citizenship

profile in digital environments (Blevins et al., 2013). Contrary to expectations, young people unfortunately lack the awareness of citizenship and are raised with insufficient knowledge (LeCompte & Blevins, 2013). In addition, in today's world there are major (declines) in ethics and moral issues (Joppke, 2007), and these are also reflected in digital environments.

Nowadays, in many parts of the world, mass activities that harm societies may also be spread through digital environments. While freedom of expression, which is said to be used in these activities, is a legitimate right, there is also a constitutional limitation on every right exercised in the internet environment. Some people, especially those who do not understand the games played through social media, write and draw many things without knowing their responsibilities, participate in anti-government acts and take hundreds of citizens to the streets, which can lead to huge economic losses and even loss of lives. Some people do this consciously, and they can harm innocent people in this way (Vardal, 2015). Furthermore, cyber bullying, credit card fraud, illegal seizure and distribution of materials that belong to someone else, viruses and inappropriate content are other digital problems that people may encounter in these environments (Oxley, 2010).

The positive or negative consequences of digital environments are shaped by their use. Nowadays, the world has become aware of the power of digital environments and has begun to take advantage of social media, especially in political, social and economic matters. If a political movement is required in an area, the social media environments, particularly Youtube and Twitter, are used effectively to this end (Bentivegna, 2006, Karakaya Polat, & Pratchett, 2014; Sendag, 2010; Tas, 2015). It is important for a good digital citizen to be able to accurately interpret what he/she encounters in digital environments in terms of the seriousness of the results.

Digital environments also have many aspects that facilitate citizenship issues. Through e-government applications, as one facilitation tool of digital technologies, many citizenship transactions can be arranged in digital environments in a short time and at equal opportunities (Chun et al., 2010). For example, in Turkey, citizens can obtain information from their own government sites, make a complaint, benefit from health services and perform many such operations online (Karakaya et al., 2014). Nevertheless, despite the widespread use of the internet due to increased opportunities, especially young people spend time in online environments for different purposes thus avoiding citizenship issues or getting their daily work done (Vissers & Stolle, 2014). For example, many people still do not use or are not aware of how they can use the e-government application service despite the major developments in the e-government applications which allow for the citizenship processes to take place online in an easy and costless way in Turkey (Metin, 2012; Sahin & Ozselli, 2003). In addition to this, the number of young people who use the internet to the extent at which they risk their health and have communication problems in these environments is not low at all (Ceyhan, 2008; Odaci & Kalkan, 2010).

### Factors influencing digital citizenship

Digital citizens are individuals who use technology frequently in their daily life and working life and possess the knowledge of technology in fulfilling their citizenship duties (Carrizales, 2009). Due to the wide range of applications, digital citizenship is also influenced by other factors as well as basic factors such as basic internet literacy skills or the opportunity to access digital environments. For example, some studies show that digital citizenship is closely related to internet self-efficacy and it is positively affected by this skill (Cheong, 2007; Choi, Glassman, & Cristol, 2017; Choi, Cristol & Gimbert, 2018). Upon examining the concept of self-efficacy, Bandura (1993) defined this concept as a personal belief that a certain behaviour can be performed. In this way, people's ability to do something is influenced by their perceptions as well as their skills (Burger, 2006). In this case, self-efficacy for the internet can be defined as individuals' beliefs about their ability to use the internet (Tsai & Tsai, 2003). This belief can be enhanced by the time spent on the internet and being experienced (Eastin & LaRose, 2000; LaRose et al., 2003; Mossberger et al., 2008; LaRose et al., 2005; Tsai & Tsai, 2010; Kim & Glassman, 2013; Wu, & Tsai, 2006). Therefore, the access to and the use of technology could positively affect the level of digital citizenship (Mossberger et al., 2008). In other words, these situations could develop digital citizenship skills of individuals through such behaviours as being more courageous but also more sensitive in virtual environments, and the ability to perform one's citizenship duties (Shelley et al., 2004). Considering that the subjects related to the internet are closely related to digital citizenship, it is believed that examining pre-service teachers in subjects such as their internet self-efficacy, having an internet connection and a computer, and the length of using the internet could be important, too.

Taking into consideration that the digital citizenship levels of pre-service teachers in Turkey are not sufficient according to certain studies (Bakir, 2016; Kaya & Kaya, 2014; Ozer & Albayrak Ozer, 2017; Yigit, 2017), it is understood that it is important to examine factors affecting digital citizenship. In addition to this, conducted studies also show that the sleeping pattern, which is an indispensable biological process for a human being (Megdal & Schernhammer, 2007), affects the level of internet use in terms of young people and adults. According to Bruni et al. (2015), people's sleeping less at night increases their internet activity. It is believed that they try to cope with the sleeping problems caused by not complying with the biological clock (Ekinci et al., 2014) in this way (Tavernier & Willoughby, 2014). It is observed that there is no study in the literature regarding this subject in terms of pre-service teachers. Since it may also affect the self-efficacy skills for the internet, which are thought to be important for digital citizenship, the effect of the sleeping pattern is also included in the scope of the study in order to clarify the relationship between them.

## *Aim of the study*

This study aims to understand factors such as internet self-efficacy, having own personal computer and own internet connection, that influence the pre-service teachers'

digital citizenship scores. This study provides a useful guideline for developing pre-service teachers' digital citizenship skills level by determining factors which can be manipulated through educational program design and implementation, for both the researches and educators.

### *Current study*

It is assumed that pre-service teachers' level of digital citizenship is related to internet self-efficacy, having own personal computer and own internet connection. According to the literature, there is few research about relationships between pre-service teachers' digital citizenship and their internet self-efficacy, having own computer and internet. There is also little research about effects on the internet self-efficacy which is relevant for digital citizenship. For this purpose, the aim of the study was to investigate relationships among digital citizenship, internet self-efficacy and other factors through the validation of the following research hypotheses:

1 Pre-service teachers who have higher internet self-efficacy are more likely to have higher digital citizenship scores.

2 Having own computer and own internet connection increases the level of digital citizenship.

3 Sleep patterns affect internet self-efficacy. Those who sleep less at night have higher internet self-efficacy because of longer internet usage time.

## Method

### *Participants*

In order to achieve the objectives of this study, three scales were administered to 723 pre-service teachers enrolled in the departments of elementary mathematics education, Turkish education, elementary science education, elementary education, special education, foreign language education, social studies education, computer education and instructional technology. Participation was voluntary. The participants were pre-service teachers studying at Sakarya University. Because of the missing data the final sample comprised n= 627 respondents. The participants' average age was 20.69 with 71.6 % females and 28.4 % males. There were 449 female and 178 male respondents involved in the study, which has been conducted quantitatively in accordance with the survey methodology. The sample consisted of sophomore and junior students. Their demographic information is presented in Table 1.

Table 1

*Demographic information of the sample*

| | N | Valid ( %) |
|---|---|---|
| Females | 449 | 71.6 |
| Males | 178 | 28.4 |
| 19- year-olds | 70 | 11.2 |
| 20-year-olds | 225 | 35.9 |
| 21- year-olds | 212 | 33.8 |
| 22- year-olds | 71 | 11.3 |
| 23-28-year-olds | 49 | 7.8 |
| Grade 2 | 325 | 51.8 |
| Grade3 | 302 | 48.2 |
| Total | 627 | 100.0 |

### *Instruments*

Three surveys were used to measure participants' digital citizenship, internet self-efficacy and sleep patterns. Also, a demographic questionnaire was used to gather data on the participants' demographic information in the 2017-2018 academic year. The research was conducted in Turkey and the scales were administered in Turkish language.

#### Digital citizenship scale

The digital citizenship scale (Isman & Gungoren, 2014) consists of 33 items rated on a 5-point Likert-type scale, ranging from "I absolutely disagree" to "I completely agree". Exploratory factor analysis was used to analyze the validity of the structure of the scale. First, the Kaiser-Mayer-Olkin (KMO) coefficient and the Bartlett sphericity test analysis were performed and KMO value was 0.75; The Bartlett test value was $\chi 2 = 3336.213$, $p = .001$. The KMO coefficient and the Bartlett test showed that the collected data were suitable for factor analysis. According to exploratory factor analysis (EFA), the communalities of the items varied between .541 and .907. The scale has high reliability with a Cronbach's Alpha of .85. In this study it was .84. The scale can be divided into nine subscales named: Digital Access, Digital Communication, Digital Literacy, Digital Security, Digital Etiquette, Digital Rights and Responsibilities, Digital Law, Digital Health and Wellness, and Digital Commerce. The scale can also be used as a one-dimensional scale to measure the digital citizenship level. A higher score indicates that the participant has a higher digital citizenship level. In this scale, digital citizenship reflects obeying the norms of appropriate and responsible behaviour with regard to technology use (Ribble, 2015, p.15).

Examples of items:

1 – I have essential skills in using digital environments easily.
2 – I use different user names and passwords in digital environments.
3 – I have respect for individual privacy in digital environments.
4 – I am aware of my rights in digital environments.
5 – I use digital environments at the addiction level. (opposite item)
6 – I know the operational steps in buying or selling in digital environments.

#### Internet self-efficacy scale

The Internet Self-efficacy Scale (Alpaslan, 2014) consists of 8 items rated on a 5-point Likert-type scale, ranging from "I absolutely disagree" to "I completely agree" in one dimension. The Cronbach alpha reliability coefficient of the scale was calculated as .904. Exploratory factor analysis was used to analyze the validity of the structure of the scale. First, the Kaiser-Mayer-Olkin (KMO) coefficient and the Bartlett sphericity test analysis were performed and KMO value was 0.881; The Bartlett test value was $\chi^2 = 3541.19$, $SD=28$, $p= .00$. The KMO coefficient and the Bartlett test showed that the collected data were suitable for factor analysis (Pett et al., 2003). According to exploratory factor analysis (EFA), the communalities of the items varied between .452

and .700. The scale has high reliability with a Cronbach's Alpha of .904. In this study it was .907. A higher score indicates a higher Internet Self-efficacy level. Internet self-efficacy reflects individuals' beliefs about their ability in using the internet (Tsai & Tsai, 2003).

Examples of items:

1 – I trust myself to solve internet problems.

2 – I trust myself in understanding the concepts related to internet software.

3 – I trust myself to learn advanced skills in a specific internet program.

### Composite scale of morningness (CSM)

The scale developed by Smith, Reilly and Midkiff (1989) and adapted into Turkish by Onder, Besoluk and Horzum, (2013) consists of 13 items belonging to one dimension. The items have their own optional answers. The scale scores range from 12 to 55 (higher scores reflecting higher morningness). The scale's Cronbach's Alpha coefficient was α=.73. In this study it was .78. The scale score reflects the sleeping pattern.

Examples of items:

1 – Please indicate the extent to which you are active in the morning or in the evening?

a Definitely active in the morning (awake in the morning and tired in the evening)

b Mostly active in the morning

c Mostly active in the evening

d Definitely active in the evening (tired in the morning and awake in the evening)

2 – Considering the rhythm you feel "best", if you were completely free to plan your day, what time would you get up in the morning?

a between 5.00 and 6.30 am

b between 6.30 and 7.45 am

c between 7.45 and 9.45 am

d between 9.45 and 11.00 am

e between 11.00 am and 12.00 (noon)

3 – You want your performance to be at the highest level for a test that you know will take 2 hours and cause excessive brain fatigue. You are free to plan your day and, considering the rhythm you feel is "the best", which of the following test times would you choose?

a between 8:00 and 10:00 am

b between 11.00 am and 1.00 pm

c between 3.00 to 5.00 pm

d between 7.00 and 9.00 pm in the evening

### Demographic questionnaire

A demographic questionnaire was used to gather data on the participants' age, gender, grade, cumulative grade point average (CGPA), department, having their own

computer, having their own internet and internet usage time. The data were obtained from participants on the following items:

Cumulative grade point average:
Department:
Do you have a computer where you live?
Do you have an internet connection where you live?
Daily internet usage time (hours):

### *Data analysis*

Analyses were conducted with the use of IBM SPSS Statistics 21. Differences among digital citizenship scores were analysed with t-test and univariate ANOVAs. Bonferroni tests were used for post hoc group comparisons and Pearson correlations were applied in case of interval-scaled variables. Gender and grade differences were tested with the use of t-test and age with univariate ANOVAs for digital citizenship and internet self-efficacy. All other relationships were tested with the use of linear regressions. According to Cohen's (1988) classification, $0.02 \leq f2 < 0{,}15$ value shows small effect, $0.15 \leq f2 < 0.35$ value shows middle effect, $0.35 \leq f2$ value shows large effect size. When these values are converted for R2; $0.02 \leq R2 < 0.13$ value shows small effect, $0.13 \leq R2 < 0.26$ value shows middle effect, $0.26 \leq R2$ value shows large effect size.

## Results

In this study, pre-service teachers' digital citizenship, internet self-efficacy and other relationships were examined in order to determine which conditions have an effect on digital citizenship. Results indicated that some variables affect pre-service teachers' digital citizenship.

The sample comprised 627 pre-service teachers. Group sizes, ranges, the mean value of digital citizenship that is the subject of the research, and internet self-efficacy scores, which are important for digital citizenship, and their standard deviations are presented in Table 2. Since there is no certainty about the score of morningness or eveningness, grouping could not be performed for sleep patterns. Therefore, the table does not include sleep patterns.

According to Table 2, men have higher levels of digital citizenship and internet self-efficacy than women who have their own computer or internet, compared to those who don't. In terms of age, 19-year-olds have lower levels of digital citizenship and internet self-efficacy than 20-year-olds or older. As for the grade level, grade 2 students have higher levels of digital citizenship than those in grade 3.

The following results present the correlations between digital citizenship scores and other independent variables in the research. The first hypothesis (h1) of the study was that pre-service teachers who have higher internet self-efficacy are more likely to have higher digital citizenship scores. To test the h1, the relationship between digital citizenship and internet self-efficacy scores was examined through a linear regression analysis. The results are presented at the first line (1) in Table 3.

Table 2

*Demographic information on the sample and scores of digital citizenship and internet self-efficacy*

| | N | Valid ( %) | Digital Citizenship | | Internet self-efficacy | |
|---|---|---|---|---|---|---|
| | | | Mean | SD | Mean | SD |
| Females | 449 | 71.6 | 121.851 | 12.586 | 26.341 | 6.107 |
| Males | 178 | 28.4 | 123.568 | 15.146 | 29.910 | 6.749 |
| Total | 627 | 100.0 | 122.338 | 13.372 | 27.355 | 6.493 |
| 19-year-olds | 70 | 11.2 | 121.646 | 12.663 | 26.638 | 6.440 |
| 20-year-olds | 225 | 35.9 | 122.593 | 12.949 | 27.363 | 5.854 |
| 21-year-olds | 212 | 33.8 | 122.261 | 13.894 | 27.265 | 7.084 |
| 22-year-olds | 71 | 11.3 | 122.635 | 13.286 | 27.324 | 6.856 |
| 23-28-year-olds | 49 | 7.8 | 122.065 | 14.556 | 28.775 | 6.192 |
| Total | 627 | 100.0 | 122.338 | 13.372 | 27.355 | 6.493 |
| Grade 2 | 325 | 51.8 | 122.914 | 13.802 | 27.592 | 6.540 |
| Grade3 | 302 | 48.2 | 121.719 | 12.888 | 27.099 | 6.444 |
| Total | 627 | 100.0 | 122.338 | 13.372 | 27.355 | 6.493 |
| Have their own computer | 494 | 78.8 | 123.276 | 13.385 | 27.729 | 6.593 |
| Don't have their own computer | 133 | 21.2 | 118.857 | 12.785 | 25.964 | 5.928 |
| Total | 627 | 100.0 | 122.338 | 13.372 | 27.355 | 6.493 |
| Have their own internet | 564 | 90.0 | 122.867 | 13.307 | 27.493 | 6.427 |
| Don't/doesn't have their own internet | 63 | 10.0 | 117.603 | 13.123 | 26.119 | 6.994 |
| Total | 627 | 100.0 | 122.338 | 13.372 | 27.355 | 6.493 |

Note: Since each age above the age of 23 has much fewer samples than other ages, the ages in this range were addressed together in order for them to yield results in statistical terms as well.

Table 3

*Linear regression analysis between digital citizenship and other variables*

| | Independent Variable | B | Std. Error | t | p |
|---|---|---|---|---|---|
| 1 | (R=0.600. R2=0.36. F(1.625)= 351.544 p<.01) | | | | |
| | Internet self-efficacy | 1.236 | .066 | 18.750 | .000 |
| 2 | (R=0.165. R2=0.03. F(2.624)= 8.726 p<.01.) | | | | |
| | Having their own computer | 3.821 | 1.314 | 2.907 | .004 |
| | Having their own internet | 4.277 | 1.787 | 2.393 | .017 |

Note. N = 625. For digital citizenship. "1" represents the variable internet self-efficacy and "2" represents the variables having own computer and having own internet. Std. Error. = Standard Error; p< .05.

The reason for not applying hierarchical regression analysis is that the conditions of Durbin Watson and CI values cannot be met.

Regression results indicated that digital citizenship correlates positively with internet self-efficacy. The effect size [f2 = R2 / (1 – R2)] was found 0.562, indicating a large effect size. Internet self-efficacy explains 36 % (R2) of the variance of digital citizenship. It can be seen that internet self-efficacy is an important predictor for digital citizenship. Thus, h1 was confirmed.

The second hypothesis (h2) stated that having own computer and own internet increases the level of digital citizenship. To test the h2, the relationship between digital citizenship and internet self-efficacy scores was also examined through a linear regression analysis. The results are also presented in Table 3 (row 2). According to the results, digital citizenship correlates positively with having own internet and own computer. The effect size of 0.031 (f2) indicates a small effect size. The results also revealed that having own internet and own computer was a predictor of digital citizenship. The predicting model explains 3 % (R2) of the variance of digital citizenship. Thus, h2 was supported as well.

In addition to these findings, digital citizenship's effect was not statistically significant ($p > .05$) in gender, grade, CGPA and age as the other variables in the research.

As an important indicator of digital citizenship, internet self-efficacy is also important for this research. Therefore, we analysed predictors of internet self-efficacy below.

Table 4

*Linear regression analysis between internet self-efficacy and other variables*

| | Independent Variable | B | Std. Error | t | p |
|---|---|---|---|---|---|
| Internet self-efficacy | Having own computer | 1.531 | .644 | 2.376 | .018 |
| | Sleep patterns | -.134 | .042 | -3.198 | .001 |
| | Internet usage time | .181 | .065 | 2.778 | .006 |
| R=0.213 | R2=0.04 | | | | |
| F(3.580)= 9.213 | p= .000 | | | | |

p<.01

A linear regression analysis showed internet self-efficacy scores are significantly influenced by having own computer, sleep patterns and internet usage time. The estimated effect size [f2 = R2 / (1 – R2)] was 0.04, indicating a small effect size. Having own computer, sleep patterns and internet usage time explain 4 % (R2) of the variance of internet self-efficacy. When it comes to the order of effects, having own computer has the greatest effect on internet self-efficacy. It is followed by internet usage time and sleeping less at night. It is believed that the positive effect of sleeping less at night on internet self-efficacy is due to the longer internet usage time. Therefore, the relationship between the sleep patterns and the internet usage time of the pre-service teachers is also examined.

Table 5.

*Linear regression analysis between internet usage time and sleep patterns*

| Independent Variable | | B | Std. Error | t | Sig. |
|---|---|---|---|---|---|
| Sleep Pattern | | -.086 | .025 | -3.443 | .001 |
| R=0.136 | R2=0.02 | | | | |
| F(1.625)= 11.857 | p= .000 | | | | |

p<.01

As another result of the research, linear regression analysis showed internet usage time is significantly influenced by sleep patterns. The effect size of analyses [f2 = R2 / (1 – R2)]

was found 0.04, indicating a small effect size. Sleep patterns explain 2 % (R2) of the variance of internet usage time. In other words, internet usage time significantly influences sleeping less at night. Thus, h3 (those who sleep less at night have more internet self-efficacy because of longer internet usage time) was supported, too.

In addition to the above, the relationship between internet self-efficacy and gender was examined with t-test analysis. The results showed that boys scored higher on internet self-efficacy than girls ($p < .05$). Age, having own internet, and CGPA effect was not statistically significant in relation to internet self-efficacy ($p > .05$).

## Discussion

Research findings show that there are certain variables that affect the digital citizenship levels of pre-service teachers. It was also observed that the hypotheses created in the study in relation to the subject are also fulfilled as a result of the study. The findings obtained in this section were discussed with the support of the studies conducted with pre-service teachers in the field.

Upon examining the literature, it was concluded in certain studies that the digital citizenship levels of pre-service teachers are not sufficient, and more studies are necessary on this subject (Bakir, 2016; Gormez, 2016; Kaya & Kaya, 2014; Ozer & Albayrak Ozer, 2017; Yigit, 2017). In order to increase the digital citizenship levels of pre-service teachers, it seems important to investigate certain factors affecting the focus skill in this respect. Since digital citizenship is closely related to the use of virtual environments, the influence of pre-service teachers' self-efficacy perceptions with regards to internet on their digital citizenship levels has been primarily revealed. The results of the study showed that the pre-service teachers' internet self-efficacy affects their digital citizenship levels at a very high rate (Choi et al., 2017). The fact that the capacity to fulfil requirements such as discovering online environments and finding solutions to problems in these environments develop in direct proportion to internet self-efficacy explains this situation (Kim & Glassman, 2013). Therefore, high correlation between digital citizenship skills and internet self-efficacy indicates the necessity to conduct studies aimed at finding ways to improve pre-service teachers' internet self-efficacy, and it explains that other factors should also be reviewed considering the effect percentage. This leads us to the effects of other variables included in the study. The obtained results revealed that having one's own computer (Aslan, 2016; Beycioglu, 2009) and own internet (Elci & Sari, 2016; Ciftci & Aladag, 2018) also affect digital citizenship positively. Nevertheless, digital citizenship does not vary by gender, grade, age (Aslan, 2016) or success of pre-service teachers. Ciftci and Aladag (2018) reached a different gender-related outcome in this regard and found that the digital citizenship levels of female pre-service teachers are higher.

Internet self-efficacy appears to be an important predictor of digital citizenship. It will be appropriate in this respect to investigate the self-efficacy for the internet as a psychosocial factor which affects the level of using the technology that is rapidly

spreading in the 21st century (Kim et al., 2013). Therefore, we analyzed the indicators of internet self-efficacy as follows.

According to the research results, internet self-efficacy is positively affected by internet usage time (Gomleksiz & Erten, 2013) and having one's own computer. Based on these results, it is observed that having own computer and own internet is important for digital citizenship. Therefore, it is considered necessary to provide computer and internet infrastructure for pre-service teachers. The equality of opportunity that will be ensured in this regard will positively affect the digital citizenship levels of pre-service teachers (Carrizales, 2009).

Also noticed in this study is that sleeping less at night seems to affect internet self-efficacy levels. It is thought that one of the reasons why sleeping less at night affects internet self-efficacy is that the pre-service teachers with such a preference spend more time on the internet. Once again, this result seems to support the fact that access to internet and internet usage times affect the internet self-efficacy levels.

To achieve the increase in accessing the internet with regards to its significant usage, the number of lessons in which students at faculties of education will encounter digital technologies during their education can be increased. Regarding internet access situations of pre-service teachers through which they can become more qualified in these lessons, pre-service teachers may be asked to perform some of their daily life duties on the internet during the lessons. Doing shopping, making hospital appointments, communicating effectively, and using digital environments in accordance with ethical rules may set examples of activities to be performed. Such activities will increase both self-confidence of pre-service teachers in relation to the internet and their digital citizenship skills. This situation may also increase the qualified internet usage habits of pre-service teachers who prefer to use the technology during the day, when compared to the users who use the internet at night.

Finally, boys scored higher on internet self-efficacy than girls (Torkzadeh & Van Dyke, 2002). The reason for that may be that boys tend to use the internet more than girls (Demirer et al., 2013). However, internet self-efficacy is not affected by age, having own internet connection nor academic success.

## Conclusion

In today's world, in which technology is rapidly developing and accompanying every moment of our lives, it is necessary for individuals to have a solid foundation for their presence in these digital environments. Therefore, it is important that pre-service teachers, who will teach and guide learners of the future, are raised as good digital citizens. Since digital citizenship is a very broad concept, there are many factors that affect it. The factors that affect digital citizenship the most for pre-service teachers are having their own computer and their internet self-efficacy levels. Considering that the citizenship skills of pre-service teachers at the age when they attend the university are still developing (Martin, 2008), it is primarily necessary to improve their internet self-

efficacy levels and to conduct studies that will improve the digital citizenship levels by fulfilling other education and infrastructure requirements. In order to determine the quality of these studies, more factors affecting digital citizenship should be revealed. In order to increase the digital citizenship levels of pre-service teachers, environments that enable them to acquire the skills required by digital citizenship, such as accessing digital environments, discovering such environments, and using them in accordance with digital ethics and laws, should be provided.

## Disclosure statement

The author(s) declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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# Utjecaji na digitalno građanstvo: iz perspektive studenata, budućih učitelja u Turskoj


## Sažetak

*Svrha ovoga rada bila je istražiti neke utjecaje na postupke digitalnoga građanstva turskih studenata, budućih učitelja. Brzim širenjem tehnologije, pojedinci su postali dijelom digitalnoga svijeta te su se suočili s pratećom potrebom razvoja vlastitih vještina digitalnoga građanstva. Povećala se važnost otkrivanja čimbenika koji utječu na razvoj vještina digitalnoga građanstva studenata, budućih učitelja koji će obrazovati digitalne građane budućnosti. Podatci su dobiveni od 723 ispitanika koristeći tri upitnika pisana na turskom jeziku. Rezultati su pokazali da samoučinkovitost u korištenju interneta, posjedovanje računala i internetske veze utječu na digitalno građanstvo. Nalazi iz ovoga istraživanja mogu pomoći u razumijevanju doprinosa pojedinih varijabli (internetska samoučinkovitost, vlastito računalo i vlastita internetska veza, obrazac spavanja, spol, godina studija, prosjek ocjena i dob) na razine vještina digitalnoga građanstva studenata, budućih učitelja. Ovo istraživanje daje korisne smjernice za uspješnije rezultate vještine digitalnoga građanstva budućih učitelja određivanjem čimbenika kojima se može manipulirati kroz projektiranje obrazovnoga sustava i implementaciju.*


**Ključne riječi**: *digitalno građanstvo; vlastito računalo; vlastita internetska veza; samodostatnost u korištenju interneta; obrazac spavanja*

## Uvod

Digitalno doba u kojem se nalazimo stvorilo je potrebu za razvojem digitalnih građana koji koriste tehnologiju na učinkovit i siguran način i koji su osviješteni o odgovornom korištenju tehnologije (Hollandsworth, Dowdy i Donovan, 2011). U današnje vrijeme, odgoj kompetentnih digitalnih građana s potrebnim iskustvom postaje važno pitanje koje se tiče obrazovnoga sustava i učitelja. To kod učitelja stvara potrebu za osviještenošću i za razvojem u dobre digitalne građane (Ribble, 2015). Međunarodno društvo za tehnologiju u obrazovanju (The International Society for Technology in Education, ISTE) naglašava da današnji učitelji moraju imati vještine digitalnoga građanstva koje podrazumijevaju korištenje tehnologije u skladu sa zakonom i etikom (2007). Struktura informacijskoga i mrežnoga društva pojavila se zajedno s nedavnim razvojem digitalnih okruženja (d'Haenens, Koeman i Saeys, 2007). Digitalno

građanstvo, koje je prepoznato kao važna tema u smislu osiguravanja poretka kod takvih struktura (Castells, 2011) kao rezultat dijeljenja i proizvodnje postojećih i novih informacija te ostvarenje komunikacije i procesa u virtualnim okruženjima, privuklo je pažnju istraživača, ali i različite definicije samoga koncepta. Prema jednoj definiciji, digitalno građanstvo odnosi se na pravila odgovarajućih, odgovornih ponašanja vezanih uz korištenje tehnologije (Ribble, 2015, str.15). Mossberger, Tolbert i McNeal (2008) pristupaju digitalnom građanstvu iz drugoga ugla i tvrde da je taj koncept povezan sa sposobnošću stvaranja i interpretiranja sadržaja na internetu, stvaranja prilika za pristupanjem internetu te njegovo redovito korištenje. Zajedničko gledište kod ovih definicija je da se digitalno građanstvo odnosi i na sposobnost korištenja tehnologije i osviještenost o odgovornosti koju pojedinac ima dok koristi tehnologiju (Carrizales, 2009; Ribble, 2015).

Iako se čini da je korištenje računala i interneta rasprostranjeno među studentima, budućim učiteljima (Birgin, Coker i Catlioglu, 2010; Gialamas, Nikolopoulou i Koutromanos, 2013), prema provedenim istraživanjima, ono ne ide u korak s razvojem digitalnoga građanstva (Sendag, 2010). Stoga postoji potreba za razvojem vještina digitalnoga građanstva kod studenata, budućih učitelja kroz njihove studijske programe (Kumar i Vigil, 2011; Stobaugh i Tassell, 2011). Budući učitelji ne bi se trebali osjećati poput stranaca kada se govori o temama kao što su pravilno korištenje virtualnih okruženja, etička pravila, autorska prava, politika u digitalnim okruženjima Na taj će način biti primjer dobroga digitalnog građana svojim učenicima te ih usmjeravati u korištenju tih okruženja (Banister i Vannatta Reinhart, 2012; Beycioglu, 2013; Silva i Mason, 2003).

## *Okvir*

### Digitalno građanstvo i učenici

Prema klasifikaciji koju su predložili Marshall i Bottomore (1992, str. 30), nove informacije i odgovornosti (pravne, etičke i dr.) koje nastaju iz građanske, političke i društvene arene dovele su do pojave digitalnoga građanstva (Coleman, 2006). Nove odgovornosti također su sa sobom donijele i mnoge posljedice. Ipak, ljudi u virtualnim okruženjima mogu djelovati nelegalno i neetički, ne razmišljajući o tim posljedicama i odgovornostima. Ribble (2015) smatra da je uzrok tome nedostatak informacija vezan uz odgovornosti digitalnoga građanstva. Stoga bi obrazovni sustav trebao omogućiti učenicima da postanu aktivni predstavnici informacijskih okruženja (Kim, Glassman, Bartholomew i Hur, 2013). Studenti bi trebali moći razumjeti građanstvo i njegovo djelovanje, usredotočiti se i znati kako riješiti društvene probleme i imati dobar i zadovoljavajući građanski profil u digitalnim okruženjima (Blevins, LeCompte i Wells, 2013). Suprotno od očekivanja, mladim ljudima nažalost nedostaje osviještenost o građanstvu, a odgojeni su bez dovoljno znanja (LeCompte i Blevins, 2013). Nadalje, u današnjem svijetu zamijećeno je veliko nazadovanje kod etičkih i moralnih pitanja (Joppke, 2007), a upravo to se ogleda u digitalnim okruženjima.

Danas se u mnogim dijelovima svijeta aktivnosti koje mogu nauditi društvu masovno mogu širiti i kroz digitalna okruženja. Dok je sloboda izražavanja, na koju se poziva kod takvih aktivnosti, zakonsko pravo, ne smije se zaboraviti na ustavno ograničenje na svako pravo koje se prakticira u internetskom okruženju. Neki ljudi, posebno oni koji ne razumiju igre koje igraju društveni mediji, pišu i iskazuju stvari neosviješteni odgovornosti koju imaju, sudjeluju u antivladinim aktivnostima i na ulice dovode tisuće ljudi što može dovesti do velikih ekonomskih gubitaka pa čak i gubitka života. Neki ljudi to čine svjesno i na taj način mogu ugroziti nevine ljude (Vardal, 2015). Nadalje, tu su i nasilje na internetu, prijevara s kreditnim karticama, nezakonito prisvajanje i distribucija tuđih materijala, virusi i neprikladni sadržaji te drugi digitalni problemi s kojima se ljudi mogu suočiti u takvim okruženjima (Oxley, 2010).

Pozitivne i negativne posljedice digitalnih okruženja oblikuje njihovo korištenje. U današnje vrijeme, svijet je postao osviješten o moći digitalnih okruženja te se kapitalizira snaga društvenih medija posebice u političke, društvene i ekonomske svrhe. Ako je u nekom području potreban politički pomak, društveni mediji, posebice Youtube i Twitter učinkovito se koriste u tu svrhu (Bentivegna, 2006, Karakaya Polat i Pratchett, 2014; Sendag, 2010; Tas, 2015). Važno je da dobar digitalni građanin može točno interpretirati ono što je uočio u digitalnom okruženju u vidu ozbiljnosti rezultata.

Digitalna okruženja, s druge strane, imaju mnoge aspekte koji potiču razvoj građanstva. Kroz e-vladine aplikacije, kao jedan oblik poticaja digitalnih tehnologija, mnoge građanske transakcije mogu se realizirati u digitalnom okruženju u vrlo kratkom vremenu i s jednakim mogućnostima za sve (Chun, Shulman, Sandoval i Hovy, 2010). Primjerice, u Turskoj, građani mogu dobiti informacije s vladinih mrežnih stranica, mogu uložiti prigovor, iskoristiti sustav zdravstva i realizirati mnoge transakcije *online* (Karakaya Polat i Pratchett, 2014). Međutim, unatoč rasprostranjenom korištenju interneta uslijed povećanih mogućnosti, posebice mladi ljudi provode vrijeme u različitim *online* okruženjima u različite svrhe izbjegavajući pitanja građanstva i izbjegavajući izvršavanje svojih dnevnih obveza (Vissers i Stolle, 2014). Na primjer, mnogi ljudi još uvijek ne znaju koristiti ili nisu osviješteni o tome kako koristiti aplikacije e-uprave unatoč značajnom razvoju aplikacije e-uprava koja omogućuje da se građanski procesi u Turskoj ostvare *online*, jednostavno i besplatno (Metin, 2012; Sahin i Ozselli, 2003). Također, broj mladih ljudi koji koriste internet do mjere u kojoj riskiraju svoje zdravlje i imaju komunikacijskih problema u tim okruženjima nije nikako mali (Ceyhan, 2008; Odaci i Kalkan, 2010).

### Čimbenici koji utječu na digitalno građanstvo

Digitalni građani su pojedinci koji u svakodnevnom privatnom i poslovnom životu često koriste tehnologiju te imaju znanje o tehnologiji u obavljanju građanskih obveza (Carrizales, 2009). Uslijed brojnih aplikacija, digitalno građanstvo također je pod utjecajem drugih čimbenika kao i osnovnih čimbenika poput osnovne mrežne pismenosti ili pristup digitalnim okruženjima. Primjerice, neka istraživanja pokazuju da je digitalno građanstvo vrlo usko povezano s internetskom samoučinkovitošću te

ima pozitivan utjecaj na tu vještinu (Cheong, 2007; Choi, Glassman i Cristol, 2017; Choi, Cristol i Gimbert, 2018). Proučavanjem pojma samoučinkovitost, Bandura (1993) je definirao isti pojam kao osobno vjerovanje da se određeno ponašanje može izvesti. Gledano tako, na sposobnost ljudi da nešto učine utječu njihova percepcija kao i vještine (Burger, 2006). U ovom slučaju, samoučinkovitost u korištenju interneta može biti definirana kao vjerovanje pojedinca u svoju sposobnost korištenja interneta (Tsai i Tsai, 2003). Ovo vjerovanje može se unaprijediti vremenom koje se provodi na internetu i iskustvom (Eastin i LaRose, 2000; LaRose, Lin i Eastin, 2003; Mossberger i sur., 2008; Livingstone, Bober i Helsper, 2005; Tsai i Tsai, 2010; Kim i Glassman, 2013; Wu i Tsai, 2006). Stoga, pristup i korištenje tehnologije mogu pozitivno utjecati na razinu digitalnoga građanstva (Mossberger i sur., 2008). Drugim riječima, ove situacije mogu razviti vještine digitalnoga građanstva pojedinaca tako da postaju hrabriji, ali i osjetljiviji u virtualnim okruženjima te mogu razviti sposobnost obavljanja svojih građanskih dužnosti (Shelley i sur., 2004). S obzirom na to da su pitanja vezana uz internet također povezana s digitalnim građanstvom, smatra se da istraživanje budućih učitelja o pitanju njihove samoučinkovitosti u korištenju interneta, vlastita internetska mreža i vlastito računalo, te duljina korištenja interneta također mogu biti važni.

Uzimajući u obzir da razine digitalnoga građanstva budućih učitelja u Turskoj nije dostatna prema nekim istraživanjima (Bakir, 2016; Kaya i Kaya, 2014; Ozer i Albayrak Ozer, 2017; Yigit, 2017), smatra se da je važno istražiti čimbenike koji utječu na digitalno građanstvo. Nadalje, provedena istraživanja također pokazuju da obrazac spavanja koji je neophodan biološki proces za ljudsko biće (Megdal i Schernhammer, 2007), utječe na razinu korištenja interneta kod mladeži i odraslih. Prema Bruni i sur. (2015), manje sna tijekom noći povećava aktivnost na internetu. Smatra se da se problem spavanja zbog neusklađenosti s biološkim satom (Ekinci, Celik, Savas i Toros, 2014) pokušavaju riješiti internetom (Tavernier i Willoughby, 2014). Uočeno je da ne postoji istraživanje vezano uz tu temu i odnos s budućim učiteljima. S obzirom da obrazac spavanja može utjecati na razinu vještine samoučinkovitosti na internetu koja je važna vještina za digitalno građanstvo, utjecaj obrasca spavanja također je uvršten u istraživanje kako bi se razjasnili odnosi među njima.

### *Cilj istraživanja*

Ovim istraživanjem pokušat će se doznati utječu li čimbenici poput internetske samoučinkovitosti, posjedovanje računala i internetske veze na rezultate koje su ostvarili budući učitelji vezano uz digitalno građanstvo. Ovo istraživanje daje korisne smjernice za razvoj vještine digitalnoga građanstva budućih učitelja određivanjem čimbenika kojima se može upravljati u kreiranju i primijeni obrazovnih programa i za znanstvenike i za nastavnike.

### *Istraživanje*

Smatra se da je razina vještine digitalne pismenosti budućih učitelja povezana s internetskom samoučinkovitošću, posjedovanjem računala i internetske veze. Prema

literaturi, postoji nekoliko istraživanja koja su se bavila odnosom digitalnih vještina budućih učitelja i njihovom internetskom samoučinkovitosti, posjedovanjem računala i internetske veze. Malo istraživanja bavilo se utjecajima na internetsku samoučinkovitost što je vrlo važno za digitalno građanstvo. Stoga je cilj ovoga istraživanja proučiti odnose između digitalnoga građanstva, internetske samoučinkovitosti i drugih čimbenika kroz potvrđivanje sljedećih hipoteza:

1. Budući učitelji koji imaju višu internetsku samoučinkovitost vjerojatnije će imati bolje rezultate vezane uz digitalno građanstvo.

2. Posjedovanje računala i internetske povezanosti povećava razinu digitalnoga građanstva.

3. Obrazac spavanja utječe na internetsku samoučinkovitost. Oni koji tijekom noći manje spavaju, imaju veću internetsku samoučinkovitost jer više vremena provode na internetu.

## Metode

### *Uzorak ispitanika*

Da bi se ostvarili ciljevi istraživanja, 723 ispitanika, budućih učitelja upisanih u program za obrazovanje budućih učitelja matematike u primarnom obrazovanju, turskog, prirodoslovlja u primarnom obrazovanju, primarnog obrazovanja, obrazovanja za posebne potrebe, stranoga jezika, društvenih znanosti te računalne i obrazovne tehnologije ispunilo je tri upitnika. Sudjelovanje je bilo dobrovoljno. Ispitanici su bili studenti sveučilišta Sakarya. Zbog podataka koji su bili nepotpuni, konačni broj ispitanika u uzorku bio je n = 627. Prosječna dob ispitanika bila je 20,69, 71,6 % ispitanika bile su žene, a 28,4 % muškarci, odnosno 449 žena i 178 muškaraca. Istraživanje je bilo kvantitativno sukladno metodologiji ankete. Uzorak su činili studenti druge i treće godine studija. Njihovi demografski podatci prikazani su u tablici 1.

Tablica 1.

### *Instrumenti*

Tri instrumenta korištena su za mjerenje vještina digitalnoga građanstva ispitanika, internetske samoučinkovitosti i obrasca spavanja. Također je korišten upitnik za dobivanje demografskih podataka ispitanika u akademskoj godini 2017./2018. Istraživanje je provedeno u Turskoj, a skale su prilagođene na turski jezik.

#### Skala digitalnoga građanstva

Skala digitalnoga građanstva (Isman i Gungoren, 2014) sastoji se od 33 čestice koje se procjenjuju na 5-stupanjskoj skali Likertova tipa u rasponu od „ u potpunosti se ne slažem" do „u potpunosti se slažem". Eksplorativna faktorska analiza korištena je za analizu valjanosti strukture skale. Prvo su provedene analize Kaiser-Mayer-Olkin (KMO) koeficijenta i Bartlettov test sferičnosti gdje je KMO vrijednost bila 0,75; vrijednost Bartlett testa $\chi 2 = 3336.213$, $p = .001$. KMO koeficijent i Bartlettov test pokazali su

da su prikupljeni podatci odgovarajući za faktorsku analizu. Prema eksplorativnoj faktorskoj analizi (EFA) preklapanja čestica izmjenjivala su se od .541 i .907. Skala ima visoku pouzdanost s Cronbachovom alphom od .85, a u ovome istraživanju bila je .84. Skala se može podijeliti na devet podskala sa sljedećim naslovima „Digitalni pristup, Digitalna komunikacija, Digitalna pismenost, Digitalna sigurnost, Digitalno ponašanje, Digitalna prava i odgovornosti, Digitalno pravo, Digitalno zdravlje i dobrobit, i Digitalno poslovanje". Skala se također može koristiti kao jednodimenzionalna skala za mjerenje razine digitalnoga građanstva. Viši rezultat ukazuje na to da je ispitanik imao višu razinu digitalnoga građanstva. U ovoj skali, digitalno građanstvo odraz je poštivanja normi primjerenoga i odgovornoga ponašanja vezanoga uz korištenje tehnologije (Ribble, 2015, str. 15).

Primjeri čestica:

1 – Imam osnovne vještine za lako korištenje u digitalnim okruženjima.
2 – Posjedujem različita korisnička imena i lozinke u digitalnim okruženjima.
3 – Poštujem privatnost pojedinca u digitalnim okruženjima.
4 – Svjestan sam svojih prava u digitalnim okruženjima.
5 – Koristim digitalna okruženja na razini ovisnosti (suprotna čestica)
6 – Poznajem operativne korake kod kupnje i prodaje u digitalnim okruženjima.

### Skala internetske samoučinkovitosti

Skala internetske samoučinkovitosti (Alpaslan, 2014) sastoji se od 8 čestica koje se procjenjuju na linearnoj skali Likertova tipa od 5 stupnjeva od „u potpunosti se ne slažem" do „u potpunosti se slažem".

Cronbachov alpha-koeficijent pouzdanosti skale bio je .904. Eksplorativna faktorska analiza korištena je za analizu valjanosti strukture skale. Prvo su provedene analize Kaiser-Mayer-Olkin (KMO) koeficijenta i Bartlettov test sferičnosti. KMO vrijednost bila je 0,881 a vrijednost Bartlettovog testa bila je $\chi^2 = 3541{,}19$, SD = 28, p = .00. KMO koeficijent i Bartlettov test pokazali su da su prikupljeni podatci bili prikladni za faktorsku analizu (Pett, Lackey i Sullivan, 2003). Prema eksplorativnoj faktorskoj analizi (EFA) podudarnosti između čestica bile su od .452 do .700. Skala ima visoku pouzdanost ako je Cronbachov alpha .904, a u ovome istraživanju bio je .907. Visoki rezultat ukazuje na višu razinu internetske samoučinkovitosti. Internetska samoučinkovitost odražava vjerovanje pojedinca u sposobnosti korištenja interneta (Tsai i Tsai, 2003).

Primjeri čestica:

1 – Imam povjerenja u sebe da mogu riješiti probleme na internetu.
2 – Imam povjerenja u sebe da razumijem pojmove vezane uz internetske programe.
3 – Vjerujem da sam mogu usvojiti napredne vještine specifičnoga internetskog programa.

### Kompozitna skala „jutarnjosti" (CSM)

Skala koju su razvili Smith, Reilly i Midkiff (1989), a na turski jezik prilagodili Onder, Besoluk i Hozum, (2013) sastoji se od 13 čestica koje pripadaju jednoj dimenziji.

Čestice imaju svoje ponuđene odgovore. Rezultati mogu biti u rasponu od 12 do 55 (viši rezultati odraz su veće „jutarnjosti"). Cronbachov alpha-koeficijent skale α =.73, a u ovome istraživanju bio je .78. Rezultat na skali odražava obrazac spavanja.

Primjeri čestica:

1 – Molimo da naznačite opseg u kojem ste aktivni ujutro ili uvečer?

a. Definitivno aktivan ujutro (budan ujutro i umoran uvečer)
b. Uglavnom aktivan ujutro
c. Uglavnom aktivan uvečer
d. Definitivno aktivan uvečer (umoran ujutro i budan uvečer)

2 – Uzimajući u obzir ritam u kojem se osjećate „najbolje", da imate slobodu planiranja dana, u koje biste se vrijeme biste budili ujutro?

a. između 5:00 i 6:30
b. između 6:30 i 7:45
c. između 7:45 i 9:45
d. između 9:45 i 11:00
e. iozmeđu 11:00 i 12:00 (podne)

3 – Želite da vam izvedba bude na najvišoj razini za test, za koji znate da ćete ga pisati za dva sata i prilično vas moždano umoriti. Slobodni ste planirati svoj dan. Uzimajući u obzir ritam u kojem se osjećate „najbolje", koje bi vrijeme iz ponuđenih bilo „najbolje" za pisanje testa?

a. između 8:00 i 10:00
b. između 11:00 i 13:00
c. poslijepodne od 15:00 do 17:00
d. između 19:00 i 21:00 uvečer

### Upitnik za demografske podatke

Upitnik za dobivanje demografskih podataka korišten je da bi se dobili podatci o dobi, razredu, prosjeku ocjena na kraju godine, odsjeku, posjedovanju računala, internetske veze i vremenu korištenja interneta. Podatci su dobiveni od ispitanika iz sljedećih čestica:

Prosjek ocjena:
Odsjek:
Imate li računalo ondje gdje živite?
Imate li internetsku vezu ondje gdje živite?
Vrijeme korištenja interneta na dnevnoj bazi (u satima):

## *Obrada podataka*

Analize su provedene koristeći IBM SPSS Statistics 21. Razlike u rezultatima digitalnoga građanstva analizirane su korištenjem t-testa i univarijantnom ANOVA analizom. Bonferonijevi testovi korišteni su za *posthoc* grupne usporedbe, a Pearsonove korelacije primijenjene su u slučaju intervalnih varijabli. Razlike prema spolu i razredu

analizirane su korištenjem t-testa, a dob je analizirana koristeći univarijantne ANOVA analize za digitalno građanstvo i internetsku samoučinkovitost. Svi drugi odnosi testirani su linearnim regresijama. Prema Cohenovoj (1988) klasifikaciji, 0,02 ≤ f2< 0,15 vrijednost ukazuje na mali učinak, 0,15 ≤ f2 < 0,35 vrijednost ukazuje na osrednji učinak, 0,35 ≤ f2 vrijednost ukazuje na veliki učinak. Kada se te vrijednosti pretvore u R2; 0,02 ≤ R2 < 0,13 vrijednost ukazuje na mali učinak, 013 ≤ R2 < 0,26 vrijednost ukazuje na osrednji učinak, 0,26 ≤ R2 vrijednost ukazuje na veliki učinak.

## Rezultati

U ovome istraživanju analizirale su se kompetencije digitalnoga građanstva budućih učitelja, internetska samoučinkovitost i drugi odnosi kako bi se došlo do odgovora koji čimbenici utječu na digitalno građanstvo. Rezultati su pokazali da neke varijable utječu na digitalno građanstvo budućih učitelja.

Uzorak je činilo 627 budućih učitelja. Veličina grupa, raspon, srednja vrijednost digitalnoga građanstva koje je i predmet istraživanja te rezultati internetske samoučinkovitosti koji su važni za digitalno građanstvo i njihove standardne devijacije prikazani su u tablici 2. S obzirom na to da rezultat za „jutarnjost" ili „večernjost" ne možemo sa sigurnošću utvrditi, grupiranje nije bilo moguće za obrazac spavanja. Stoga tablica ne uključuje obrazac spavanja.

Tablica 2.

Prema tablici 2, muškarci imaju više razine digitalnoga građanstva i internetske samoučinkovitosti od žena koje imaju svoje računalo ili internet, u usporedbi s onima koji to isto nemaju. S obzirom na dob, 19-godišnjaci imaju niže razine digitalnoga građanstva i internetske samoučinkovitosti od 20-godišnjaka ili starijih. S obzirom na godinu studija, studenti u drugoj godini imaju više razine digitalnoga građanstva od onih u trećoj godini.

Sljedeći rezultati prikazuju korelacije između rezultata digitalnoga građanstva i drugih nezavisnih varijabli u istraživanju. U prvoj se hipotezi (h1) ovoga istraživanju tvrdi da budući učitelji koji imaju višu internetsku samoučinkovitosti vrlo vjerojatno imaju više rezultate digitalnoga građanstva. Za provjeru h1, odnos rezultata digitalnoga građanstva i internetske učinkovitosti ispitan je kroz linearnu regresijsku analizu. Rezultati su prikazani u prvome redu (1) u tablici 3.

Tablica 3.

Rezultati regresijske analize pokazali su da je digitalno građanstvo u pozitivnoj korelaciji s internetskom samoučinkovitošću. Veličina učinka [f2 = R2 / (1 – R2)] bila je 0,562 što ukazuje na veliku snagu učinka. Internetska samoučinkovitost objašnjava 36 % (R2) varijance digitalnoga građanstva. Može se uočiti da je internetska samoučinkovitost važan prediktor digitalnoga građanstva. Stoga je h1 potvrđena.

Druga je hipoteza (h2) da posjedovanje računala i vlastiti pristup internetu povećava razinu digitalnoga građanstva. Za testiranje h2 ispitan je odnos između digitalnoga

građanstva i rezultata internetske samoučinkovitosti koristeći linearnu regresijsku analizu. Rezultati su također prikazani u tablici 3 (red 2). Prema rezultatima, digitalno građanstvo korelira pozitivno s posjedovanjem računala i vlastitoga pristupa internetu. Veličina učinka od 0,031 (f2) ukazuje na malu jačinu učinka. Rezultati također pokazuju da su posjedovanje računala i vlastiti pristup internetu prediktori digitalnoga građanstva. Model prediktora objašnjava 3 % (R2) varijance digitalnoga građanstva. Stoga je h2 također potvrđena.

Osim ovih nalaza, učinak digitalnoga građanstva nije bio statistički značajan ($p > .05$) kod varijabli spol, godina, prosjek ocjena i dob te kod ostalih varijabli u istraživanju.

Kao važan pokazatelj digitalnoga građanstva istražena je internetska samoučinkovitost. Stoga smo analizirali prediktore internetske samoučinkovitosti koji su prikazani niže u tablici 4.

Tablica 4.

Linearna regresijska analiza pokazala je da su na rezultate internetske samoučinkovitosti značajno utjecali posjedovanje računala, obrazac spavanja i vrijeme korištenja interneta. Predviđena veličina učinka [f2 = R2 / (1 – R2)] bila je 0,04 koja ukazuje na malu veličinu učinka. Posjedovanje računala, obrazac spavanja i vrijeme korištenja interneta objašnjavaju 4 % (R2) varijance internetska samoučinkovitost. Kada je riječ o redoslijedu učinka, posjedovanje računala ima najveći učinak na internetsku samoučinkovitost. Slijedi vrijeme korištenja interneta i kraće vrijeme spavanja. Smatra se da je pozitivan učinak kraćega spavanja na internetsku samoučinkovitost posljedica duljega vremena provedenoga na internetu. Stoga je odnos između obrasca spavanja i vremena korištenja interneta budućih učitelja također ispitan.

Tablica 5.

Drugi rezultat istraživanja dobiven linearnom regresijskom analizom pokazao je da vrijeme korištenja interneta značajno utječe na obrazac spavanja. Veličina učinka analiza [f2 = R2 / (1 – R2)] bila je 0,04 ukazujući na malu veličinu učinka. Obrazac spavanja objašnjava 2 % (R2) varijance vremena korištenja interneta. Drugim riječima, vrijeme korištenja interneta značajno utječe na kraće spavanje tijekom noći. Stoga je h3 (oni koji manje spavaju noću, imaju bolju internetsku samoučinkovitosti jer dulje vrijeme provode na internetu) također potvrđena.

Osim gore navedenoga, odnos između internetske samoučinkovitosti i spola istražena je koristeći t-test analizu. Rezultati su pokazali da su mladići imali bolje rezultate kod internetske samoučinkovitosti od djevojaka ($p < .05$). Dob, posjedovanje vlastitoga pristupa internetu i prosjek ocjena nije bio statistički značajan u odnosu na internetsku samoučinkovitost ($p > .05$).

## Diskusija

Rezultati istraživanja pokazuju da određene varijable koje utječu na razine digitalnoga građanstva budućih učitelja. Također je uočeno da su hipoteze nastale u istraživanju

u odnosu na kolegije također ostvarene kao rezultat istraživanja. Dobiveni rezultati analizirani su u odnosu na istraživanja provedena s budućim učiteljima u ovome području.

Pregledom literature zaključeno je da neka istraživanja razina digitalnoga građanstva budućih učitelja nisu dostatna te da su nužna daljnja istraživanja (Bakir, 2016; Gormez, 2016; Kaya i Kaya, 2014; Ozer i Albayrak Ozer, 2017; Yigit, 2017). Za povećanje razine digitalnoga građanstva budućih učitelja, čini se važnim ispitati određene čimbenike koji u tom pogledu utječu na tu vještinu. S obzirom na to da je digitalno građanstvo usko povezano s korištenjem virtualnih okruženja, otkrivena je percepcija budućih učitelja o utjecaju internetske samoučinkovitosti na razinu njihovoga digitalnog građanstva. Rezultati istraživanja pokazali su da internetska samoučinkovitost budućih učitelja utječe u velikoj mjeri na razine njihovoga digitalnog građanstva (Choi i sur., 2017). Činjenica da je sposobnost zadovoljavanja uvjeta, poput otkrivanja *online* okruženja i nalaženja rješenja za probleme koje ta okruženja stvaraju izravno proporcionalna internetskoj samoučinkovitosti objašnjava situaciju (Kim i Glassman, 2013). Stoga, visoka korelacija između vještina digitalnoga građanstva i internetske samoučinkovitosti ukazuje na potrebu provođenja istraživanja s ciljem pronalaženja načina da se poboljša internetska samoučinkovitost budućih učitelja. Također, ukazuje na to da se i drugi čimbenici trebaju razmotriti uzimajući u obzir postotak učinka. To nas dovodi do učinaka drugih varijabli koje su uvrštene u istraživanje. Dobiveni rezultati otkrili su da posjedovanje računala (Aslan, 2016; Beycioglu, 2009) i vlastite internetske veze (Elci i Sari, 2016; Ciftci i Aladag, 2018) također pozitivno utječu na digitalno građanstvo. Ipak, digitalno građanstvo ne mijenja se u odnosu na spol, godinu studija, dob (Aslan, 2016) i uspjeh budućih učitelja. Ciftci i Aladag (2018) došli su do drukčijega ishoda vezanoga uz spol te su otkrili da su razine digitalnoga građanstva žena više.

Internetska samoučinkovitost čini se važnim prediktorom digitalnoga građanstva. Stoga bi bilo primjereno istražiti internetsku samoučinkovitost kao psihosocijalni čimbenik koji utječe na razinu korištenja tehnologije koja se tako brzo širi u 21. stoljeću (Kim i sur., 2013). Shodno tome, analizirani su sljedeći pokazatelji internetske samoučinkovitosti.

Prema rezultatima istraživanja, na internetsku samoučinkovitost pozitivno djeluje vrijeme korištenja interneta (Gomleksiz i Erten, 2013) i posjedovanje računala. Prema rezultatima, uočava se da je posjedovanje računala i internetske veze važno za digitalno građanstvo. Stoga se smatra potrebnim osigurati računalo i mrežnu infrastrukturu budućim učiteljima. Jednake mogućnosti koje će se tako osigurati pozitivno će utjecati na razine digitalnoga građanstva budućih učitelja (Carrizales, 2009).

Ovo istraživanje također je pokazalo da manje sati spavanja noću utječe na razine internetske samoučinkovitosti. Smatra se da je jedan od razloga zbog kojega manjak sna tijekom noći utječe na internetsku samoučinkovitost jest taj da budući učitelji koji preferiraju manjak sna, provode više vremena na internetu. Rezultati još jednom potvrđuju činjenicu da pristup internetu i vrijeme korištenja interneta utječu na razinu internetske samoučinkovitosti.

Za povećanje pristupanja internetu u vidu značajnoga korištenja, broj sati koje studenti na učiteljskim fakultetima provedu koristeći digitalne tehnologije tijekom obrazovanja može se povećati. S obzirom na pristup internetu koji omogućuje bolju osposobljenost budućih učitelja za te kolegije, studenti bi morali odraditi neke od svojih svakodnevnih obveza koristeći internet tijekom nastave. Obavljanje kupovine, naručivanje kod liječnika, učinkovita komunikacija i korištenje digitalnih okruženja u skladu s etičkim pravilima mogu biti primjeri aktivnosti koje se mogu provesti. Takve aktivnosti povećat će samopouzdanje budućih učitelja u odnosu na vještine korištenja interneta i vještine digitalnoga građanstva. Takva situacija može povećati kvalitetne navike korištenja interneta onih budućih učitelja koji preferiraju korištenje tehnologije tijekom dana u odnosu na one korisnike koji to čine tijekom noći.

Konačno, mladići su imali bolje rezultate kod pitanja internetske samoučinkovitosti od djevojaka (Torkzadeh i Van Dyke, 2002). Razlog može biti taj što mladići češće koriste internet od djevojaka (Demirer, Bozoglan, i Sahin, 2013). Međutim, dob, posjedovanje internetske veze i akademsko postignuće ne utječu na internetsku samoučinkovitost.

## Zaključak

U današnje vrijeme u kojemu se tehnologija rapidno razvija i prati svaki trenutak naših života, pojedinci moraju imati čvrste temelje za prisutnost u digitalnim okruženjima. Stoga je važno da budući učitelji koji će poučavati i usmjeravati učenike budućnosti, budu odgojeni kao dobri digitalni građani. S obzirom na to da je digitalno građanstvo vrlo širok koncept, na njega utječe mnogo čimbenika. Čimbenici koji najviše utječu na digitalno građanstvo budućih učitelja su posjedovanje računala i razina internetske samoučinkovitosti. Uzimajući u obzir to da se vještine digitalnoga građanstva budućih učitelja u dobi dok su na fakultetu tek razvijaju (Martin, 2008), prije svega je važno poboljšati njihovu razinu internetske samoučinkovitosti i provoditi vrstu obrazovanja koja će poboljšati razinu digitalnoga građanstva udovoljavanjem drugih obrazovnih i infrastrukturnih zahtjeva. Da bi se odredila kvaliteta tih studija, potrebno je istražiti i ostale čimbenike koji utječu na digitalno građanstvo. Za povećanje razine digitalnoga građanstva budućih učitelja, okruženja koja će im omogućiti stjecanje vještina potrebnih za digitalno građanstvo, poput pristupa digitalnim okruženjima, otkrivanju digitalnih okruženja i korištenju istih u skladu s etičkim i drugim zakonima moraju biti osigurana.

### Izjava

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